MASTER OF SCIENCE IN MODELING, VIRTUAL ENVIRONMENTS, AND SIMULATION

ANALYZING PERSONNEL RETENTION UTILIZING MULTI-AGENT SYSTEMS
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Master of Science in Modeling, Virtual Environments, and Simulation-December 2000
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As we enter the 21st Century, the Department of Defense finds itself facing a significant personnel crisis. Despite a thirty percent reduction in manpower needs, the military is continually failing to meet its retention requirements.

There are numerous factors that are causing this problem, to include the booming U.S. economy, the highest military deployment rates in our history, and the widespread use of the Internet. The result is that our service members have more non-military career options than ever before, and too many are choosing them. The problem appears to be getting worse as recent surveys indicate that over 50 percent of the enlisted force, and over 33 percent of the officer force intend to leave the military at their next opportunity.

The drastic change in retention behaviors did not occur overnight, yet the military failed to react quickly to the change. The reason for this is that strength projections are calculated using linear models, which are based upon historical data; these programs are incapable of warning about non-linear behaviors. If the military had used supplemental non-linear models, it most likely would have been able to react sooner.

This thesis, therefore, provides the Military Personnel Retention Simulator (MPRS), a model for exploring non-linear retention behaviors in an ever-changing environment. The model utilizes modern object-oriented programming, high-speed processors, and multi-agent system concepts in order to provide an unsituated environment which users can manipulate in order to observe potential retention behaviors. The model is exploratory in nature, and is therefore not predictive. Users are therefore urged to utilize the MPRS in support of the decisions that they make, and not as the basis for such decisions.